

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION
FENCE, NON-ELECTRIC
(feet)
CODE 382A

SCOPE

This document establishes the technical details, workmanship, and quality and extent of materials required to install the practice in accordance with the Conservation Practice Standard. The information shall be considered when preparing site-specific specifications for non-electric fences. Specifications for electric fences and game-proof fences are contained in separate documents.

The site-specific specifications for installing, operating, and maintaining the practice on a specific field or treatment unit shall be documented via the NRCS Hawaii Jobsheet for Non-electric Fence and given to the client. Other documents such as practice worksheets, maps, drawings, and narrative statements in the conservation plan may be used to plan or design the practice and to prepare the site-specific specifications.

TYPES OF NON-ELECTRIC FENCES

There are many types of non-electric fences suitable for controlling livestock, wildlife, and/or humans. Listed below are common types of non-electric fences; however, certainly not an exhaustive list.

- 3-Wire, barbed or smooth, minimum height 40 inches. (Figure 1)
- 4-Wire, barbed or smooth, minimum height 42 inches. (Figure 2)
- 5-Wire, barbed or smooth, minimum height 48 inches.
- Woven wire topped with 2 strands of barbed wire, minimum height 42 inches. (Figure 3)
- 4-Wire, barbed or smooth, suspension fence. (Figure 4)

If a fence is being planned that is not listed above, contact the Hawaii State Range Management Specialist for approval at the beginning of the planning process and prior to construction.

MATERIAL SPECIFICATIONS

All materials used in the construction of non-electric fences shall have a minimum life expectancy of ten (10) years.

Non-electric fences will be constructed that equal or exceed the strength and durability of one built in accordance with the materials specifications in the following tables:

- Table 1 Material Specifications for Corner Braces and Gate Posts;
- Table 2 Material Specifications for Line Posts
- Table 3 Material Specifications for Wire; and
- Table 4 Material Specifications for Fasteners and Stays.

Table 1
Material Specifications for Corner Braces and Gate Posts

Wood	
Specifications for Acceptable Wood Material	<ul style="list-style-type: none"> Untreated posts of kiawe, koa, ohia, or eucalyptus (insultimber). (NOTE: In wet conditions, ohia posts may not hold up for the entire lifespan of the fence.) Redwood, cedar, or pine posts treated with a creosote coal-tar solution or pentachlorophenol, with not less than six pounds retention of the preservative per cubic foot in accordance with Federal Specification TT-W-571c or TT-W-571i. Federal Specifications are correlated to the American Wood-Preservers' Association Standards P2, P8, P9, C1, & C5.
Rot Treatment	<ul style="list-style-type: none"> Wood posts set in concrete will be treated to prevent rot. (Note: When cutting treated wood posts, be sure to paint the cut end with approved preservative to prevent rot from entering the post at the cut.)
Corner Braces and Gate Posts	<ul style="list-style-type: none"> Minimum length: 7 feet, including minimum 3 feet set in ground. Minimum diameter: 5 inches at top or smaller end. Compression Member (horizontal or diagonal brace) of corner brace or gate assembly : <ul style="list-style-type: none"> Minimum length: 6 feet Minimum diameter: 4 inches.
In-Line Braces (pull post or strainers)	<ul style="list-style-type: none"> Can be either horizontal or diagonal in design. Minimum length: 6 feet Minimum diameter: 4 inches at the smaller end. Compression Member (horizontal or diagonal brace) of in-line brace assembly: <ul style="list-style-type: none"> Minimum length: 6 feet Minimum diameter: 4 inches.
Steel	
Corner Braces and Gate Posts	<ul style="list-style-type: none"> Steel Pipe: <ul style="list-style-type: none"> Minimum length: 7 feet, including minimum 3 feet set in ground. Minimum diameter: 3 inches. Or equivalent weight of 7.58 pounds per linear foot. Angle iron with the brace member welded or bolted to the in-ground posts may also be used. Minimum size: 2" X 2" X 1/4". (Figure 5) Compression Member (horizontal or diagonal brace) or corner brace or gate assembly: <ul style="list-style-type: none"> Minimum diameter steel pipe: 2 1/2 inches. Minimum size angel iron: 2" X 2" X 1/4". (Figure 5) Posts will be set in concrete.

In-Line Braces (pull post or strainers)	<ul style="list-style-type: none"> • Can be either horizontal or diagonal in design. • Steel pipe: <ul style="list-style-type: none"> • Minimum length: 6 feet • Minimum diameter: 3 inches. • Compression Member (horizontal or diagonal brace) of in-line brace assembly: <ul style="list-style-type: none"> • Minimum length: 6 feet • Minimum inside diameter: 3 inches. • Posts will be set in concrete.
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Table 2
Material Specifications for Line Posts

Wood	
Specifications for Acceptable Wood Material	<ul style="list-style-type: none"> • Untreated posts of kiawe, koa, ohia, or eucalyptus (insultimber). (NOTE: In wet conditions, ohia posts may not hold up for the entire lifespan of the fence.) • Redwood, cedar, or pine posts treated with a creosote coal-tar solution or pentachlorophenol, with not less than six pounds retention of the preservative per cubic foot in accordance with Federal Specification TT-W-571c or TT-W-571i. Federal Specifications are correlated to the American Wood-Preservers' Association Standards P2, P8, P9, C1, and C5.
Rot Treatment	<ul style="list-style-type: none"> • Wood posts set in concrete will be treated to prevent rot. (Note: When cutting treated wood posts, be sure to paint the cut end with approved preservative to prevent rot from entering the post at the cut.)
Minimum Length and Diameter	<ul style="list-style-type: none"> • Minimum length: 6 feet, including minimum 2 feet set in ground and 6" above top wire. • Minimum diameter: 3 inches at top or smaller end.
Steel	
Specifications	<ul style="list-style-type: none"> • Steel line posts must conform to ASTM Standard A702-89. • Standard "T," "U", or "Y" section steel posts weighing not less than 1.33 pounds per foot of length, exclusive of anchor plate, may be used in lieu of wood line posts. (Figure 7) Post length must be at least five and one half feet (5½'). • Steel line posts shall be rolled from high carbon steel and shall have a protective coating. The coating may be either galvanized by the hot dip process or painted in accordance with Commercial Standard 184 with one or more coats of high-grade, weather-resistant steel paint or enamel applied and baked. • Steel posts shall be studded, embossed or punched for the attachment of wire to the posts.

Table 3
Material Specifications for Wire

Parameter	Specifications
Acceptable Materials	Barbed, smooth, or woven wire are acceptable for non-electric fences.
Barbed Wire	
Federal Specification	<ul style="list-style-type: none"> The wire must conform to Federal Specification RR-F-221 for the specified types and styles of fencing.
ASTM Standards	<ul style="list-style-type: none"> The wire must also conform to the following ASTM Standards to which the Federal Specification is correlated to: A475-98 & A474-98. High Tensile Wire must conform to ASTM Standards: A854/A854M-98 and A679/A679M-00.
Galvanization (See Figure 8)	<ul style="list-style-type: none"> All wire shall be of new galvanized material. In non-coastal areas (with dry to humid climatic conditions): the wire shall have a Class 2 galvanization (zinc coating of at least 0.50 oz/sq.-ft. or 153 g/m² of wire surface). In coastal areas: The wire will have a Class 3 galvanization (zinc coating of 0.80 oz/sq.-ft. or 244 g/m² of wire surface). (NOTE: Aluminum coating has at least 3 to 5 times the corrosion resistance than zinc coating.)
Gage, Barbs, and Breaking Strength (See Figures 9, 10A and 10B.)	<ul style="list-style-type: none"> Gage will be 12½ gage or heavier double twisted wires OR 13½ to 15½ gage high-tensile, double twisted wires. Note: The smaller the gage, the heavier the wire. For example, 10-gage wire is heavier than 12½-gage wire. Barbs will be 14 gage or heavier 2-point barbs on 4- or 5-inch centers. Minimum strand breaking strength of 950 foot pounds is required.
Smooth Wire	
Federal Specification	<ul style="list-style-type: none"> The wire must conform to Federal Specification RR-F-221 for the specified types and styles of fencing.
ASTM Standards	<ul style="list-style-type: none"> The wire must also conform to the following ASTM Standards to which the Federal Specification is correlated to: A475-98 & A474-98. High Tensile Wire must conform to ASTM Standards: A854/A854M-98 and A679/A679M-00.
Galvanization (See Figure 8)	<ul style="list-style-type: none"> All wire shall be of new galvanized material. In non-coastal areas (with dry to humid climatic conditions): All types of wire shall have a Class 2 galvanization (zinc coating of at least 0.50 oz/sq.-ft. or 153 g/m² of wire surface) In coastal areas: All types of wire will have a Class 3 galvanization (zinc coating of 0.80 oz/sq.-ft. or 244 g/m² of wire surface). (NOTE: Aluminum coating has at least 3 to 5 times the corrosion resistance than zinc coating.)
Gage	<ul style="list-style-type: none"> Gage will be 12½ gage or heavier OR 15½ gage if high tensile. Minimum strand breaking strength of 950 foot pounds is required or tensile strength grade 135 (135,000 psi) or better (i.e., grades 180, 200, or 220).

Table 3
Material Specifications for Wire
(continued)

Parameter	Specifications
Woven Wire	
Federal Specification (Figure 11)	<ul style="list-style-type: none"> The wire must conform to Federal Specification RR-F-221 for the specified types and styles of fencing.
ASTM Standards	<ul style="list-style-type: none"> The wire must also conform to the following ASTM Standards to which the Federal Specification is correlated to: A116-00.
Galvanization (See Figure 8)	<ul style="list-style-type: none"> All wire shall be of new galvanized material. In non-coastal areas (with dry to humid climatic conditions): All types of wire shall have a Class 2 galvanization (zinc coating of at least 0.50 oz./sq.-ft. or 153 g/m² of wire surface) In coastal areas: All types of wire will have a Class 3 galvanization (zinc coating of 0.80 oz./sq.-ft. or 244 g/m² of wire surface). (NOTE: Aluminum coating has at least 3 to 5 times the corrosion resistance than zinc coating.)
Height and Spacing	<ul style="list-style-type: none"> Minimum height: 26 inches. Minimum stay spacing: 12 inches.

APPROXIMATE PROTECTION IN VARIOUS CLIMATIC CONDITIONS AND VARIOUS GALVANIZATION CLASSES (Years until rust appears)						
Wire Size	Climatic Condition					
	Dry		Humid		Coastal and Industrial	
	Class 1	Class 3	Class 1	Class 3	Class 1	Class 3
9	15	30	8	13	3	6
11	11	30	6	13	2	6
12 ½	11	30	6	13	2	6
	7	23	5	10	1 ½	4 ½
APPROXIMATE LIFE AFTER FENCE STARTS TO RUST UNTIL IT REACHES ONE-HALF ORIGINAL STRENGTH (Class 1 galvanization)						
Wire Size	Dry		Humid		Coastal and Industrial	
9	50+		50+		25	
11	50+		50		16	
12 ½	50+		35		12	
14 ½	50		20		7	

Table 4
Material Specifications for Fasteners and Stays

Parameter	Specifications
Fasteners (for attaching wire to posts) (Figure 12 and 13)	<ul style="list-style-type: none"> • Staples may be used on wood posts: <ul style="list-style-type: none"> • Gage: Shall be nine (9) or heavier polished (bright) hard wire. • Length: The shanks shall be 1½ inches long for softwoods and 1¼ inches long for hardwood posts. • Will be driven diagonally with the wood grain to avoid splitting the post. Space should be left between the staple and the line post to permit movement of the wire. • Tie wires may be substituted for staples on wood and steel posts: <ul style="list-style-type: none"> • Gage: Shall be 16 or heavier galvanized wire. • The wire will be wrapped around the posts. • Factory clips may be used on wood and steel posts: <ul style="list-style-type: none"> • Commercially available factory clips are usually adequate.
Stays	<ul style="list-style-type: none"> • Suitable twisted wire stays (wire spacers) are commercially available; however, since their main purpose is to keep the wire strands separated, their manufacturing specifications are not as critical as the fence wire itself. • Wood lathe or battens – either pressure treated or untreated - are often used as well as small tree limbs. Both are effective but require fastening to the wires and usually need more maintenance.

INSTALLATION SPECIFICATIONS

The fence will be installed in accordance with proper safety procedures.

The completed job shall be workmanlike and present a good appearance.

If brush or rock clearing, grading or other land work is to be done in conjunction with the fence installation, appropriate grading and erosion control measures shall be undertaken or installed. In some instances, it is advisable to also install a **Firebreak** (Code 394) and an **Access Road** (Code 560). Specifications for all measures to be installed in conjunction with the fence should be attached to the Jobsheet.

Table 5
Installation Specifications for Corner Braces and Gate Posts
(See Figures 14-19)

Parameter	Specifications
Design and Installation	<ul style="list-style-type: none">• Design and install corner braces and gateposts first. (NOTE: These are the major components of a fence; therefore, close attention to the quality of their placement, material, and construction is necessary).• The installation of the fence shall conform to the figures and drawings.
Horizontal Movement	<ul style="list-style-type: none">• All in-ground posts shall be placed to the required depth and shall be firmly embedded so there is less than one inch (1") of horizontal movement at the top of the post when a horizontal force of 80 lbs. is applied.• Steel pipe, angle iron, U, T, or Y steel in-ground posts shall be set in concrete.
Soil Conditions	<ul style="list-style-type: none">• Soil conditions; e.g., low strength (sandy or wet soils), shallowness, rockiness, steepness, or high shrink-swell capacity; may dictate a change in the normal design of a fence and require larger, longer, and deeper posts, more braces, straddlejacks or rock cribs, or trees may have to be used. (Note: Refer to USFA/SLM 2400-Range.)
Bracing	<ul style="list-style-type: none">• Bracing is required at all corners and gates and at all significant changes in the direction of the fence; usually at angles equal to or greater than twenty degrees (20°).
Minimum Post Length	<ul style="list-style-type: none">• 7', including minimum 3' set in-ground.

Table 6
Installation Specifications for In-line Horizontal (H) Braces

Parameter	Specifications
Placement	H compression posts will be installed at least three feet (3') above the ground level and at least six inches (6") from the top of the in-ground posts.
Attachment	H compression members shall be secured to the in-ground posts with steel pins or dowels (rebar) or notched and spiked to the in-ground posts.
Spacing	Depending on the topography and design, in straight sections, brace units (pull posts) shall be spaced at intervals from 66' to 990'.
Anchor Post	The anchor (end) post of an H-brace will be set with a one-inch (1") lean away from the direction of pull.
Brace Wire (Figure 20)	A doubled, smooth, twisted, diagonal brace wire will be installed four inches (4") from the top of the brace post to four inches (4") from the bottom of the anchor (end) post. A twist stick will be used to tighten the brace wire assembly and will be left in place.

Table 7
Installation Specifications for In-line Diagonal Braces

Parameter	Specifications
Selection Considerations (Figure 21 and 22)	<ul style="list-style-type: none"> • Diagonal braces using doubled, twisted, smooth wire or wood or steel posts can be used in lieu of two horizontal braces. • Diagonal braces are structurally equal to the horizontal fence brace. The diagonal brace requires one less post, is 8% more resistant to overturn, 25% less expensive, and requires only about half the labor to install.
Design and Installation Principles	<ul style="list-style-type: none"> • In the design and installation of a diagonal brace or strainer, several principles should be kept in mind: <ul style="list-style-type: none"> • Make the diagonal brace as long as possible (minimum of 6'). • Be sure that the end of the diagonal brace in contact with the ground is free to move forward and is not blocked by a stake or post. • The diagonal brace can bear against the corner post in any location from the middle of the post to the top of the post. However, the best place to have the diagonal brace contact the corner post is within six inches (6") from the top. • When installing a diagonal strainer, the corner post should be set first, then the diagonal brace installed, then the bottom holding wire brace installed, and then the fence wires attached and tensioned. If this procedure is followed, the lower wire brace will not have to be twisted to tighten. • If one diagonal strainer will not hold the fence tension, a second diagonal strainer should be installed w/ each strainer taking half of the fence tension. • When using the diagonal strainer as a line brace, care must be exercised not to over-tension the brace wires. The vertical post can be jacked out of the ground if the wires are tensioned too much.

Table 8
Installation Specifications for Line Posts

Parameter	Specifications
Minimum Depth and Setting	<ul style="list-style-type: none"> Line posts will be set at least two feet (2') in the ground. All fence posts shall be erect within 2 inches (2") of plumb. All fence posts shall deviate no more than 3 inches (3") of centerline.
Spacing	<ul style="list-style-type: none"> For three-wire fences, maximum line post spacing will be 16½ feet, with or without stays. For four-wire fences, maximum line post interval shall not exceed one rod (16.5 ') if no stays are used between posts, twenty feet (20') if one stay is used between posts, or thirty feet (30') if stays are used between posts at intervals not greater than ten feet (10').
Locations	<ul style="list-style-type: none"> On woven wire fences, all fence posts, particularly line posts, shall be located on high points of corridor or grade breaks to prevent the woven wire course from "bellying".

Table 9
Installation Specifications for Wire and Staple

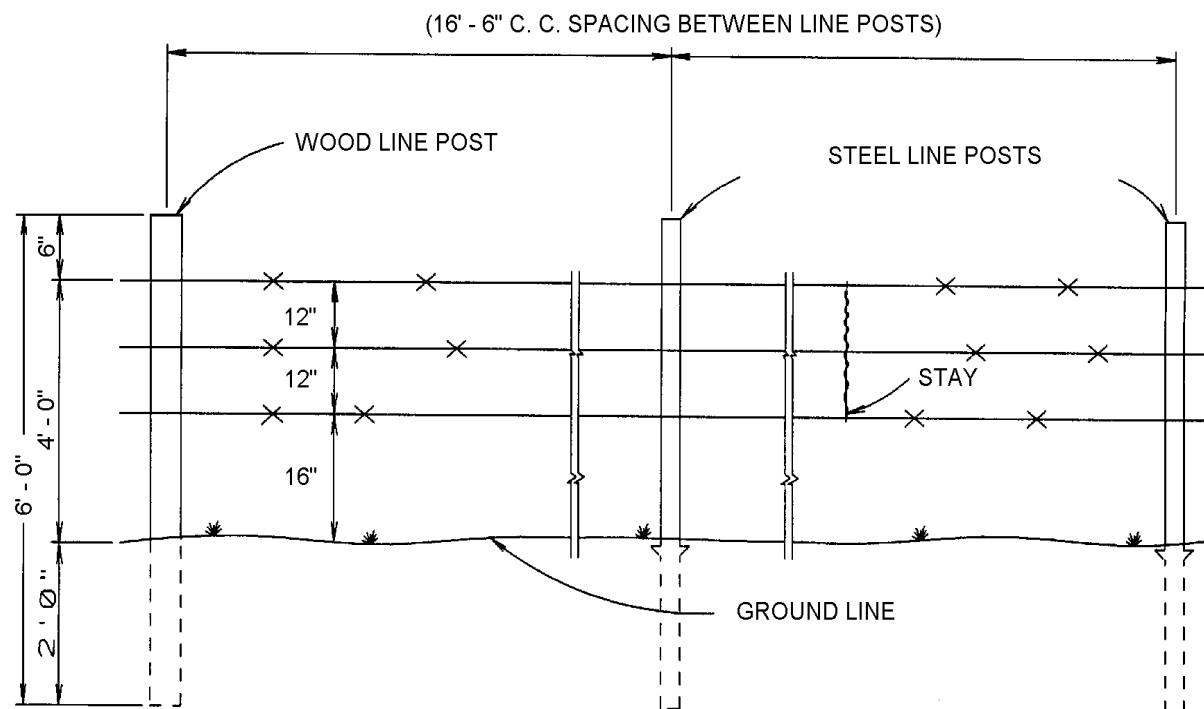
Parameter	Specifications
Splicing (Figure 23a)	<ul style="list-style-type: none"> Splicing high-tensile wire shall be done in any of three different ways: knots, nicopress sleeves, or Reliable Wirelinks.
Knots (Figure 23b & 23c)	<ul style="list-style-type: none"> When using a knot to splice, the "Western Union" splice will be used. Overlapping the ends of each wire and wrapping each wire five times around the other wire makes the splice. The use of a fence-splicing tool will facilitate this operation and result in a neat job.
Barbed and Smooth Wire (Figure 24)	<ul style="list-style-type: none"> Typical spacing of 3-Wire, 4-Wire, and 5-Wire, barbed or smooth, should be installed as demonstrated in Figure 24. Barbed or smooth wire tension midway between posts, particularly and especially line posts, shall be such that the pressure of ten (10) pounds shall allow no more than four inches (4") of displacement from the straight line between posts.
Woven Wire	<ul style="list-style-type: none"> Twenty-six inch (26") tall woven wire fences will be topped by at least two double-strand wires (barbed or smooth) spaced so that the top wire is 38" to 48" above the ground. When using woven wire that is either 32" or 35" high, only one double-strand wire (barbed or smooth) is needed to attain a total fence height of 38" to 48". Woven wire greater than 39" does not need a top wire added. Tension on the top wire, of the woven wire course, shall be such that ten (10) pounds of pressure applied midway between posts shall cause no more than six inches (6") of displacement from the straight line between posts. An optional one- (1) strand of barbed wire may be attached to the posts between the ground surface and the bottom wire, of the woven wire course, preferably one-inch (1") above the ground surface. At no point, this strand of barbed wire shall be no more than 2 inches (2") above the ground surface or more than one inch (1") below the bottom wire, of the woven wire course. For feral pig proof fences the preceding shall be applied. Splicing of woven wire shall be accomplished as demonstrated in Figure 23c.
Staples (Figures 25 & 26)	<ul style="list-style-type: none"> The staples will be driven diagonally with the wood grain to avoid splitting the post. Space should be left between the staple and the line post to permit movement of the wire.

Table 10
Special Considerations for Suspension Fences

Component	Special Considerations
Suitability	<ul style="list-style-type: none"> • Suspension fences are not suitable for rough or broken country or where vegetation will interfere with the whipping action of the fence. The whipping action of a suspension fence turns livestock better than conventional fences. • Also, suspension fences should not be built on a curve. In-line directional changes shall be by definite angles properly braced.
Posts	<ul style="list-style-type: none"> • Posts for suspension fences are subjected to greater tensions than conventional fence posts. They should be built with double brace assemblies every $\frac{1}{4}$ mile (1,320 feet) or closer. Any straight section of suspension fence more than $\frac{1}{2}$ mile long shall have a minimum of two- (2) line anchor or pull post assemblies. The pull post assemblies shall be equally spaced along straight sections. It is desirable to tie off all wires at stretch panels and start with a new wire on the next $\frac{1}{4}$-mile section. • All wood corner posts, brace, and in-line pull posts will have an eight-inch (8") diameter top and be imbedded $3\frac{1}{2}$ feet in the ground instead of the usual three feet (3'). They will extend above the top wire at least three inches (3"). • If wood line posts are used, they shall have a minimum top diameter of four inches (4"). • Steel line posts shall be at least six feet (6') long, have anchor plates, and be driven in the ground at least two feet (2). • The average line post spacing is 100 feet; however, 50– to 120-foot spacing may be used. The shorter spacing is required in undulating topography. Spacing of less than 80 feet reduces the flexibility of whipping action of the spans.
Wire	<ul style="list-style-type: none"> • Suspension fences shall have four (4) or more wires spaced appropriately. • The wire will be kept tight so there is no more than three inches (3") of sag between posts.
Stays or Droppers	<ul style="list-style-type: none"> • Stays or droppers of galvanized twisted wire, wood, or fiberglass will be used to maintain wire spacing, serve as visual barriers to animals, and distribute pressure evenly to all wires in a span. • Treated wood stays are preferable because they are a more effective visual barrier to animals. • Stay spacing between posts should be 15 to 20 feet. • The lower ends of the stays must not touch the ground or otherwise interfere with the swaying motion of the fence.

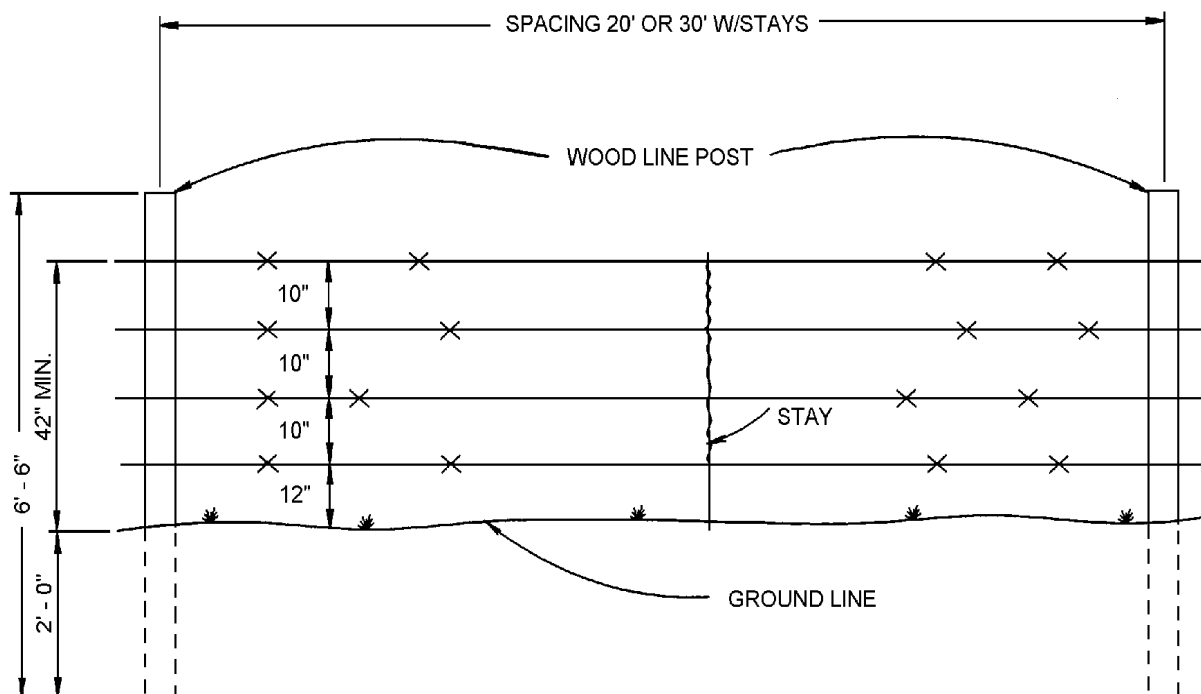
BASIS FOR ACCEPTANCE

After the fence has been installed, a site inspection will be made to determine if the materials and the design and installation adhered to the site-specific specifications documented in the practice Jobsheet. See the General Manual 450 Part 407, Documentation, Certification, and Spot Checking for guidance on which parameters of the fence require checking.



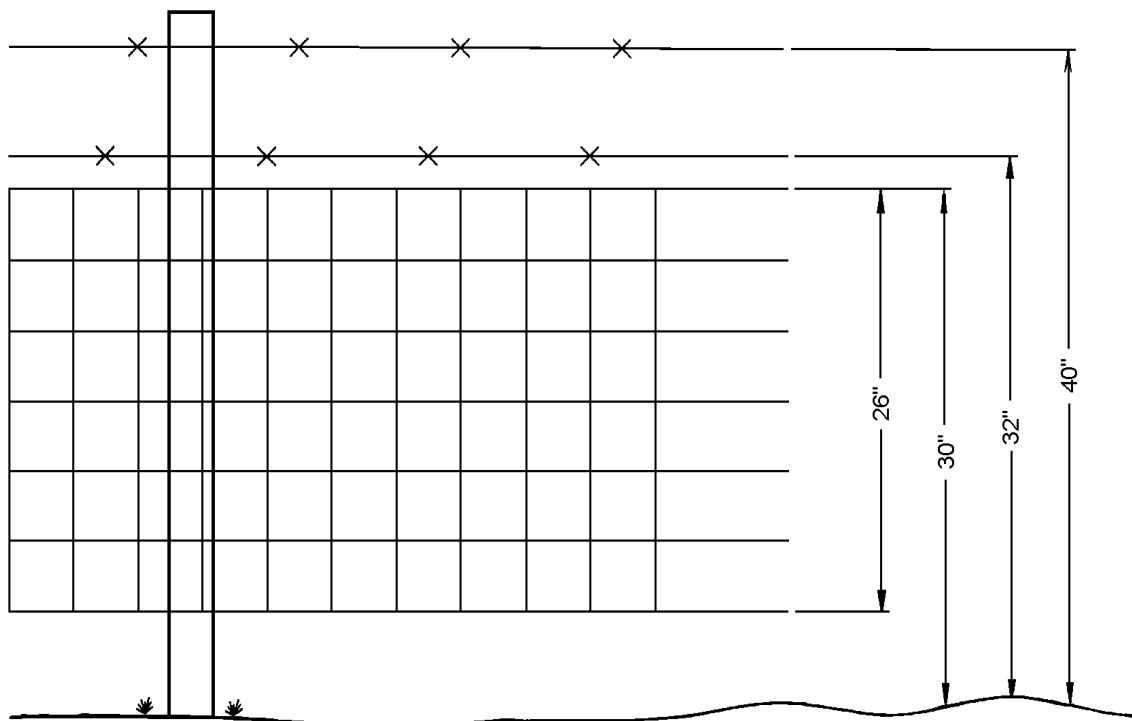
STANDARD 3 WIRE FENCE

Figure 1



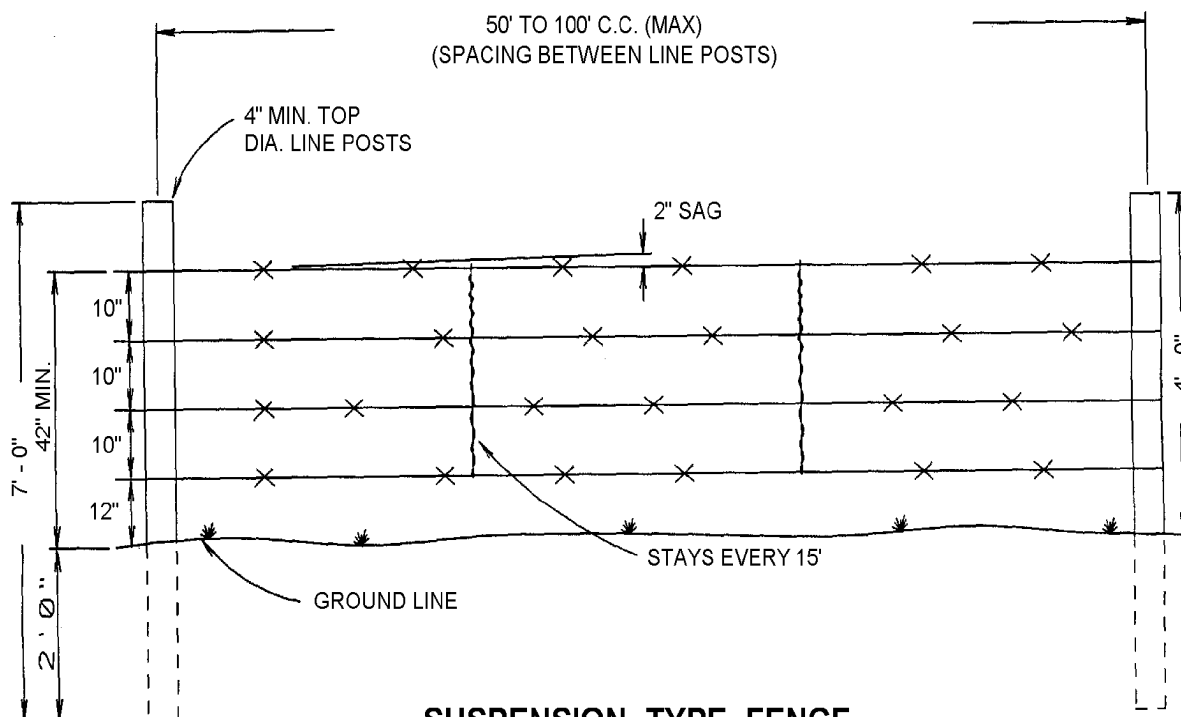
STANDARD 4 WIRE FENCE

Figure 2



WOVEN WIRE WITH 2 STRANDS BARBED WIRE

Figure 3



SUSPENSION TYPE FENCE

Figure 4

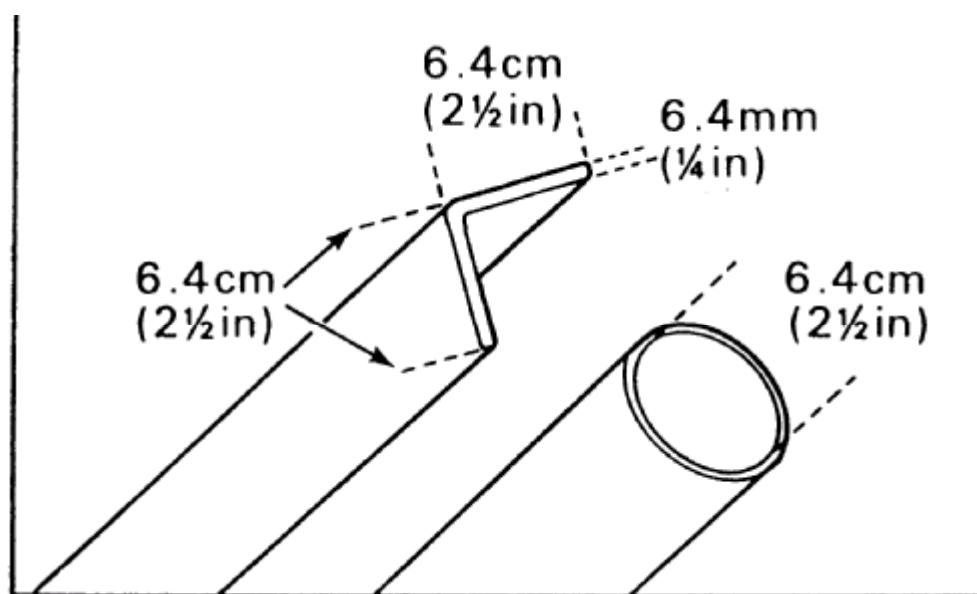


Figure 5

Steel diagonal-brace ends and corners have been used satisfactorily by setting the end or corner post in concrete and placing the diagonal braces in concrete. However, mixing the concrete and waiting for the concrete to cure add time and effort to the operation.

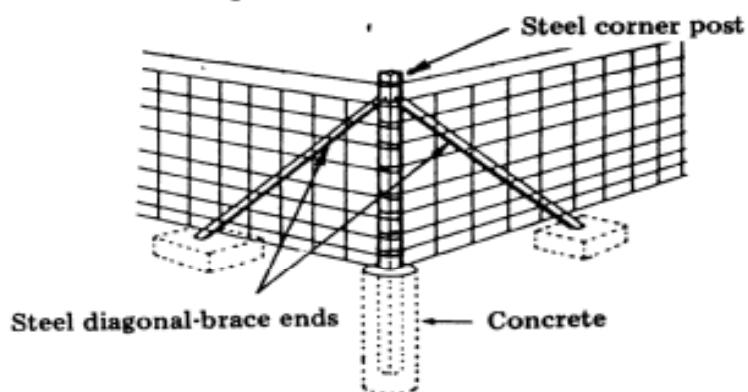


Figure 6

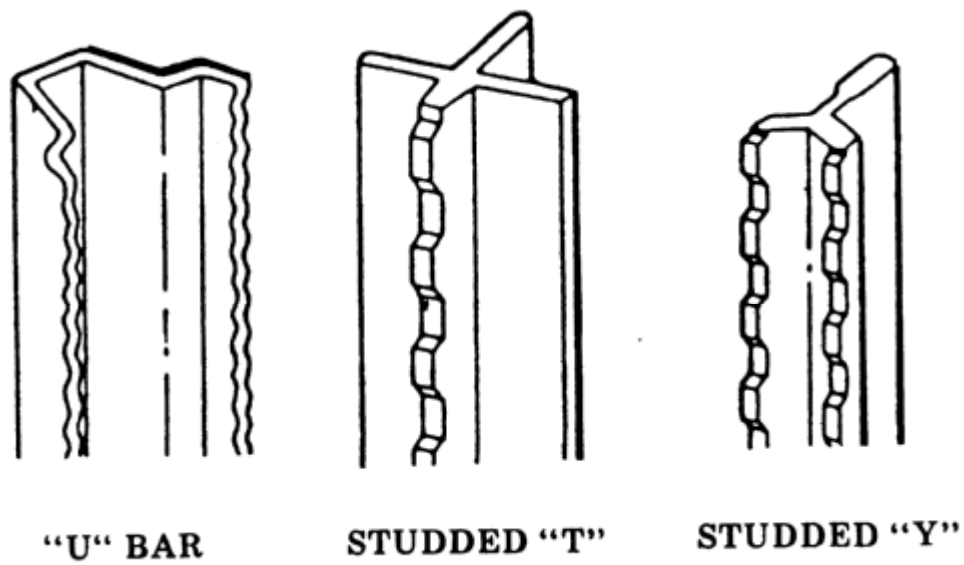


Figure 7

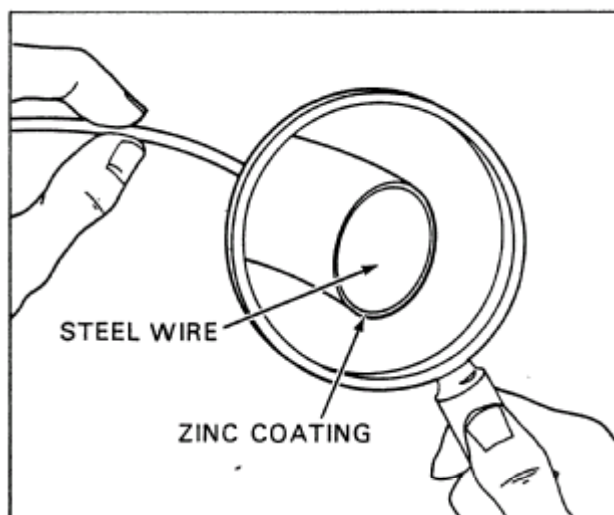


FIGURE 34. A thin coating of zinc is applied to steel wire to prevent rusting.

Figure 8

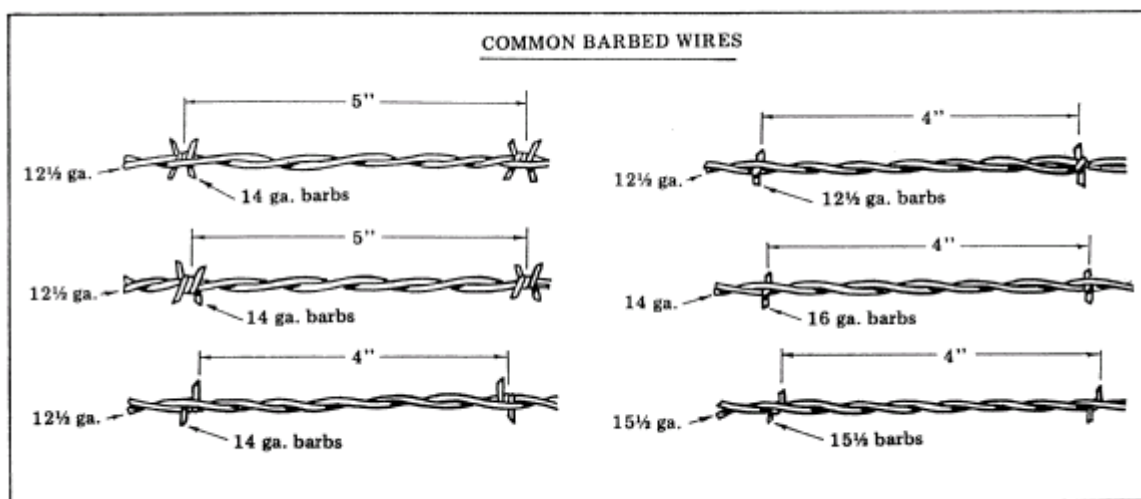


Figure 9

	DIAMETER		GAGE
	(mm)	(in)	
WOVEN WIRE	3.7	.1483	9ga.
	3.3	.1350	10ga.
	3.0	.1205	11ga.
BARBED WIRE	2.5	.0990	12½ga.
	2.0	.0800	14ga.
	1.9	.0760	14½ga.
	1.6	.0625	16ga.
	1.2	.0475	18ga.
ELECTRIC FENCING WIRE			

Figure 10A

Relative Strength of Barbed Wire

<u>Gauge No.</u>	<u>Relative strength</u>
12½	1.0**
13½ H.T.*	1.1
14	0.6
15½ H.T.*	1.0

*High Tensile strength wire.
**12½ gauge used as the standard.

Figure 10B

Horizontal spacings are:

(Furnished in 20-rod rolls)

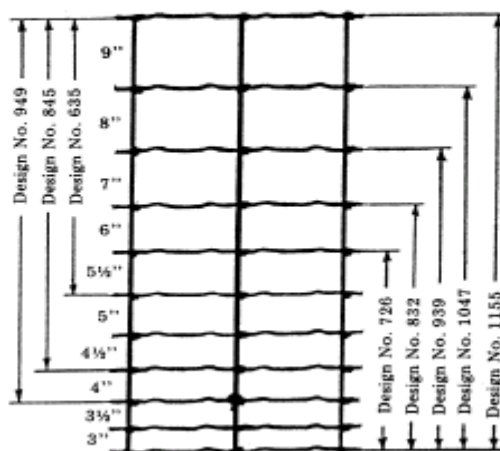


Figure 11

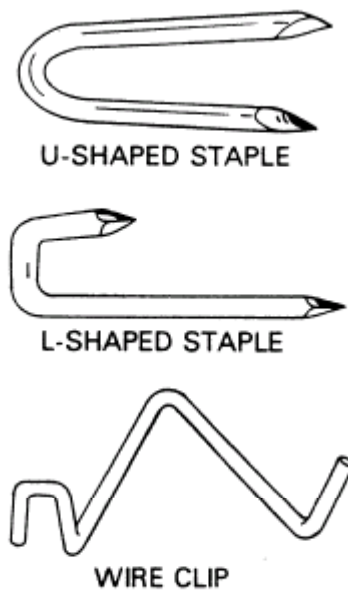


Figure 12

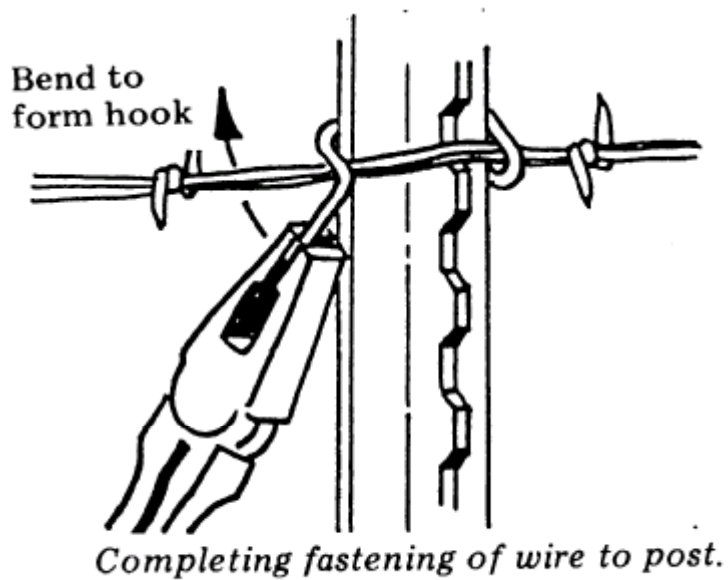


Figure 13

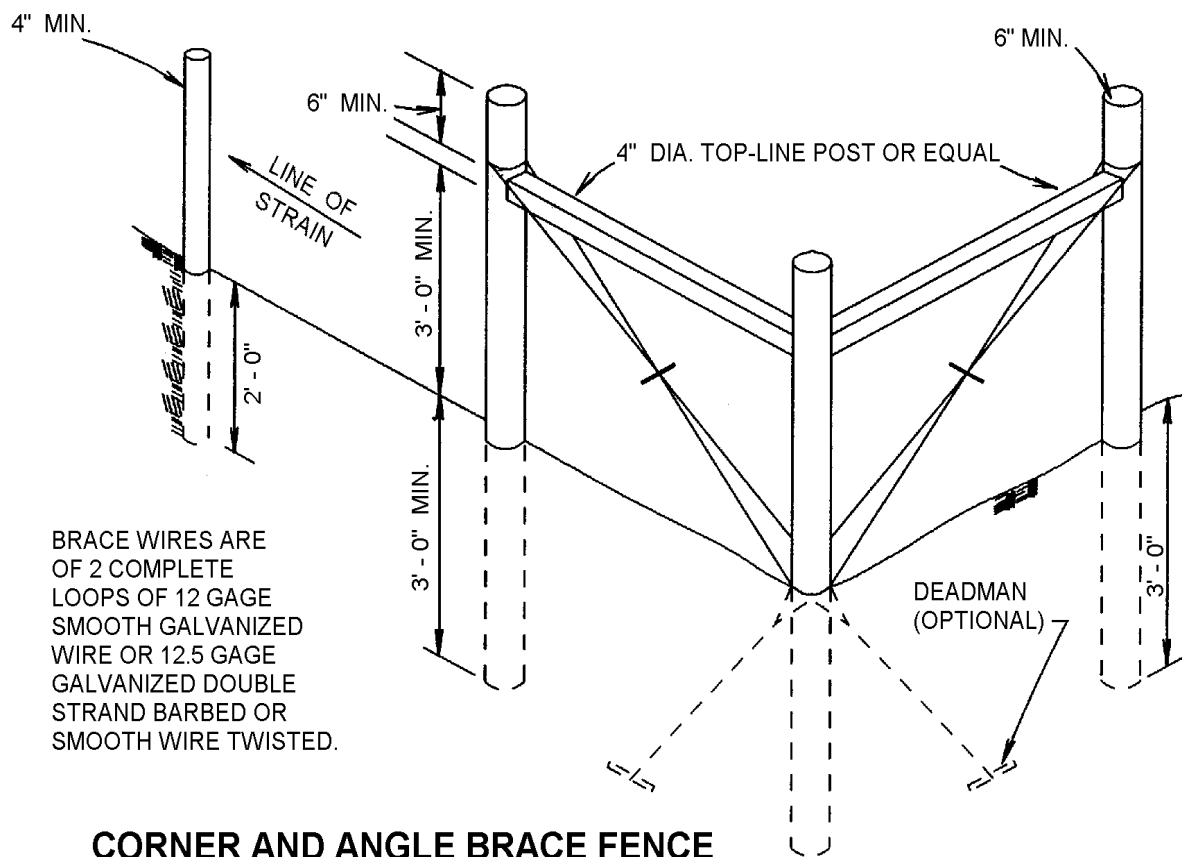


FIGURE 4.

FIGURE 14

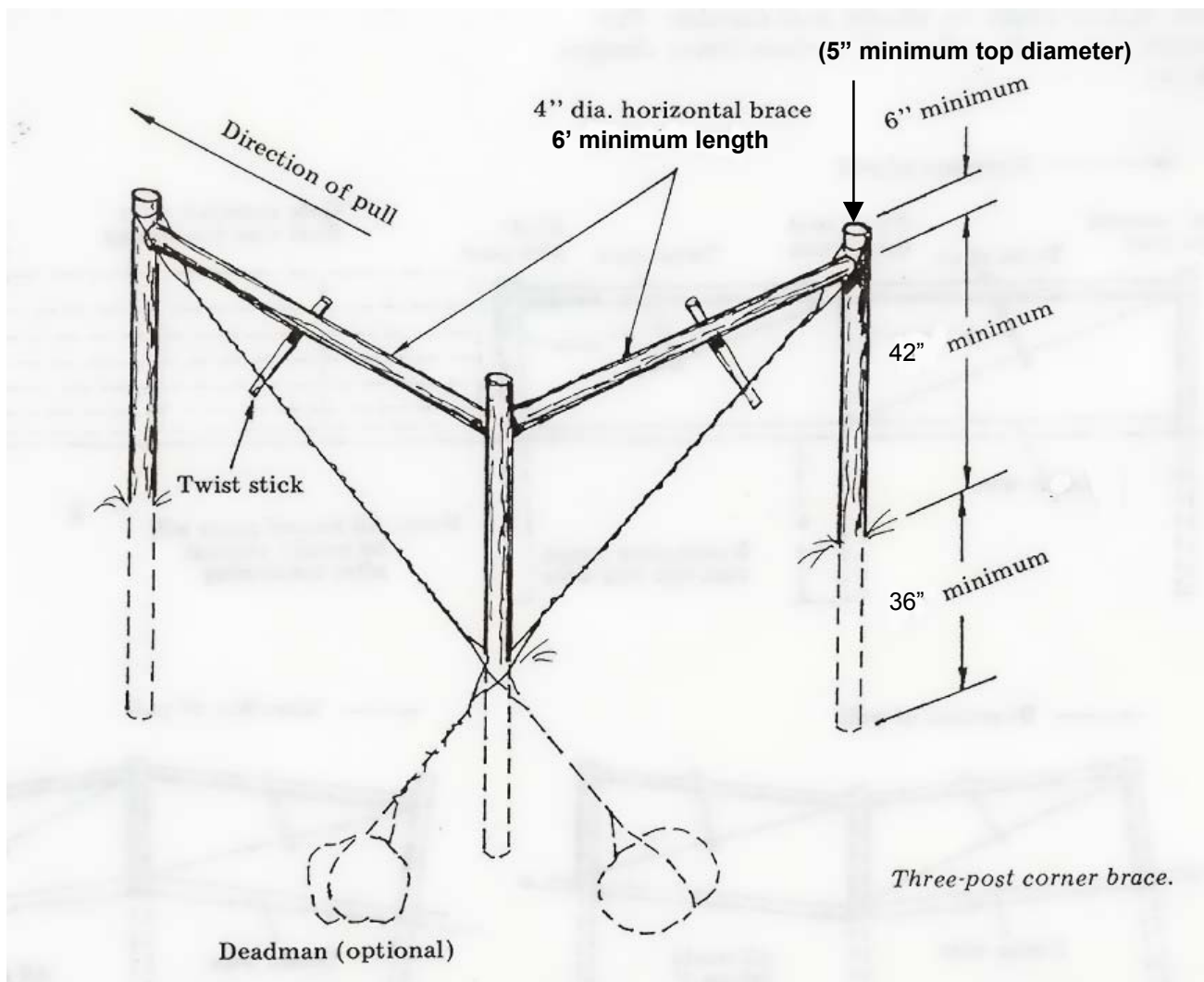


Figure 15A

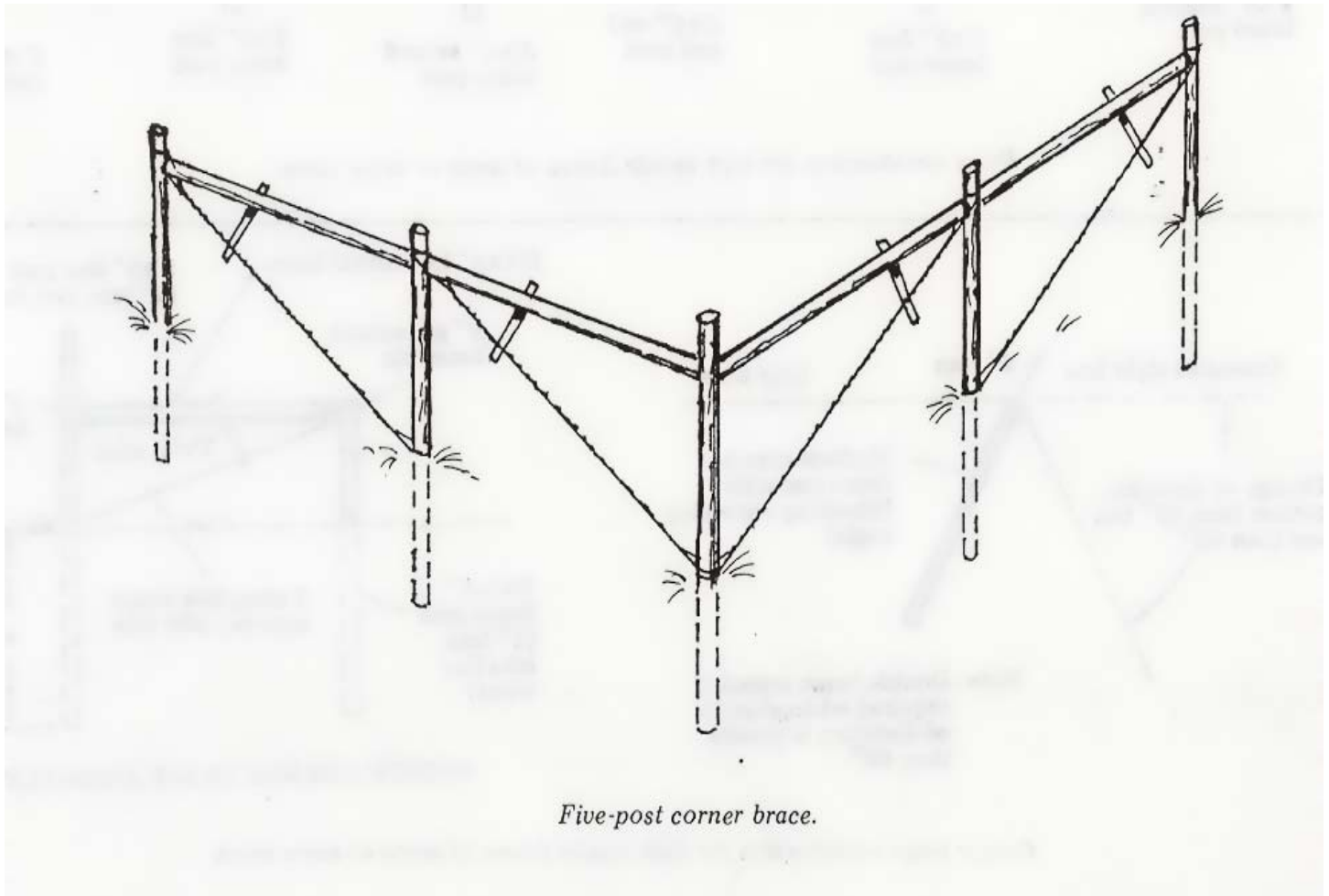


Figure 15B

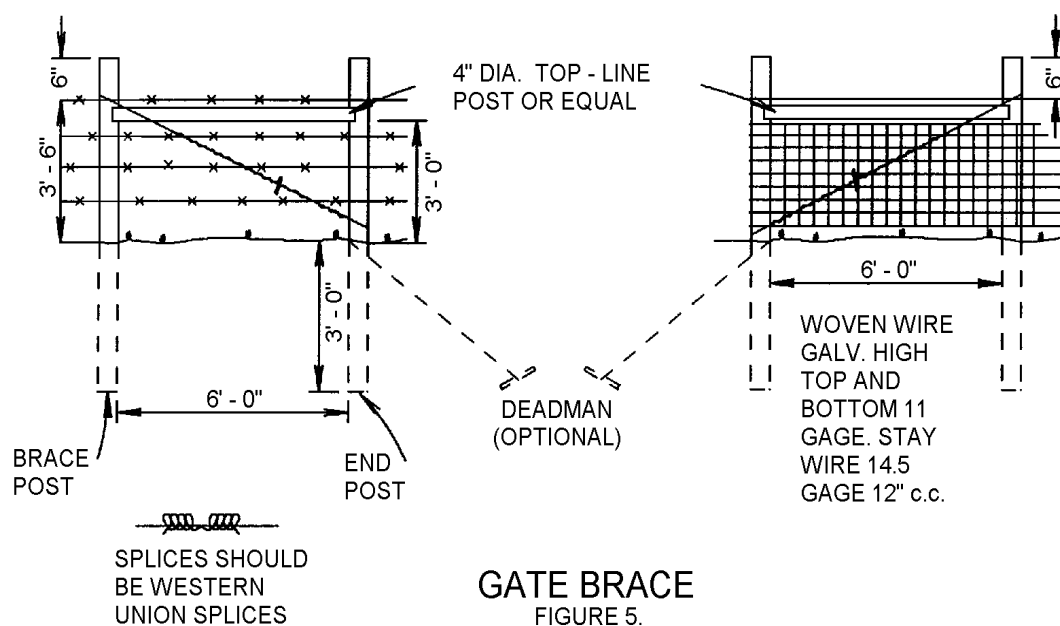
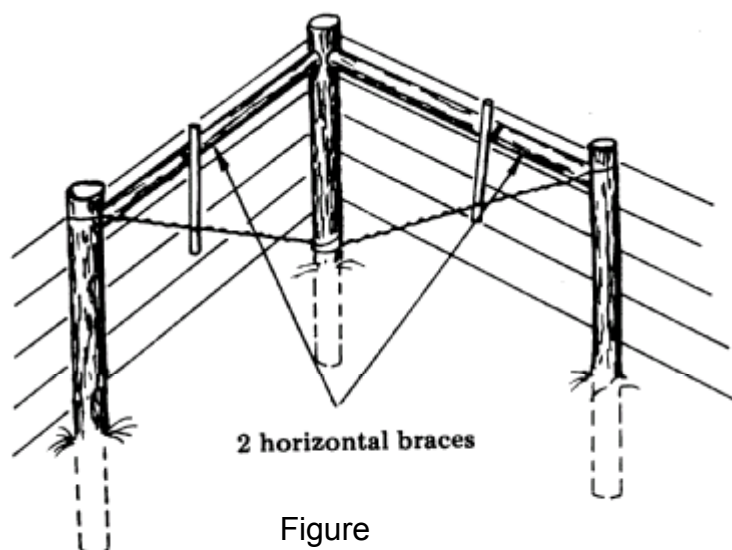


Figure 17

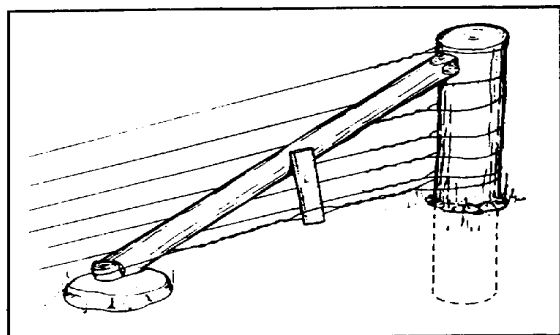


Figure 1 Diagonal gate or fence end strainer.

Practical lengths for compression members of
diagonal (or horizontal) fence strainers

Pipe size (in)	Wood ^{1/} diameter (in)	Practical length (ft)	Allowable length (ft)
2		8	10
2½		9½	12
3		12	14½
3½		13½	17
4		15	19
	3	7½	
	4	10	
	5	12½	
	6	15	
	7	17½	
	8	20	

^{1/} Diameter at center and straight length assumed.

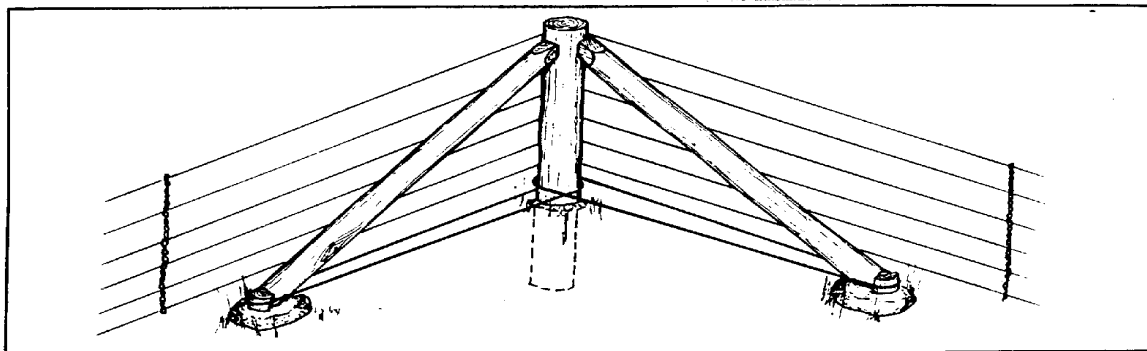


Figure 2 Two diagonal strainer corner braces.

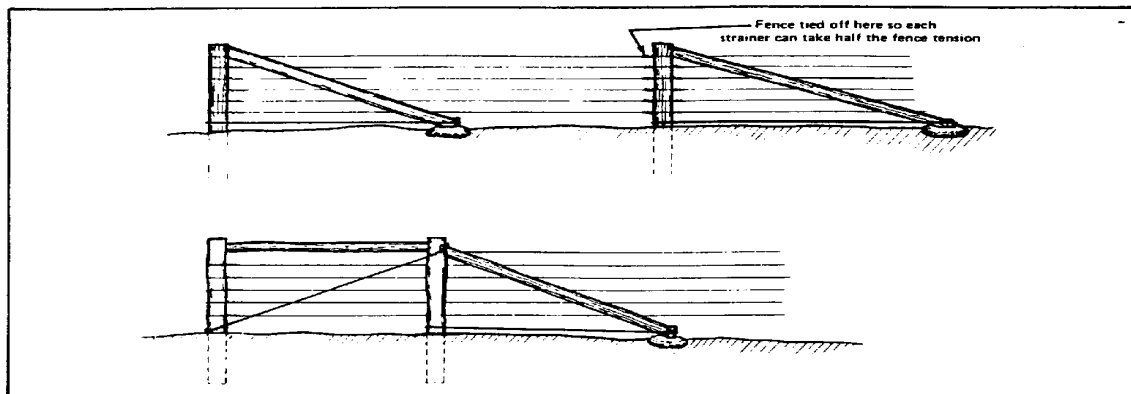


Figure 3 Use of two diagonal strainers for holding in soft soil. Also, one horizontal and one diagonal strainer could also be used as shown. Each of the diagonal strainers takes half of the tension in the fence; therefore, the fence must be tied off at each diagonal strainer.

Figure 18

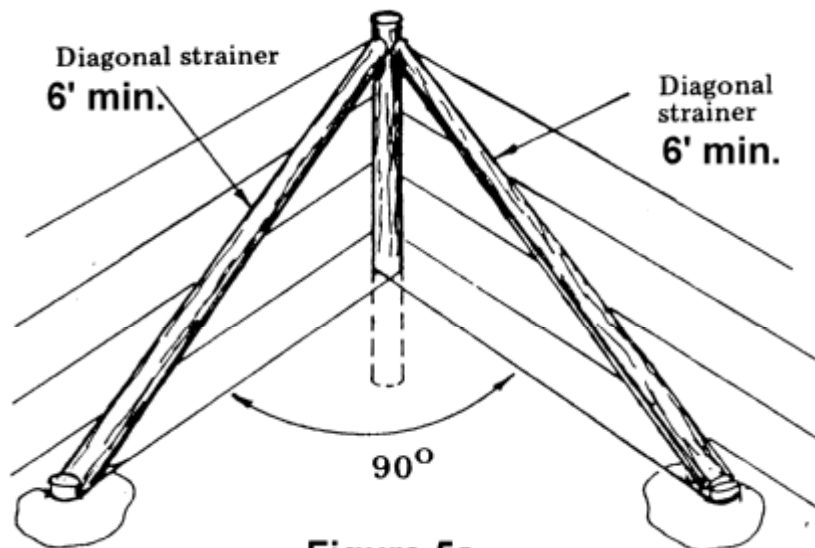
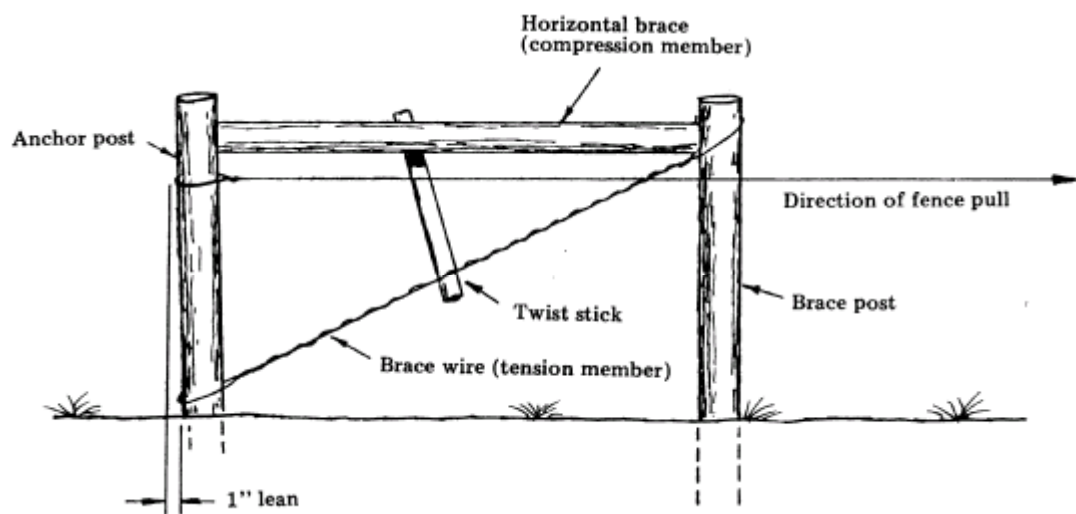


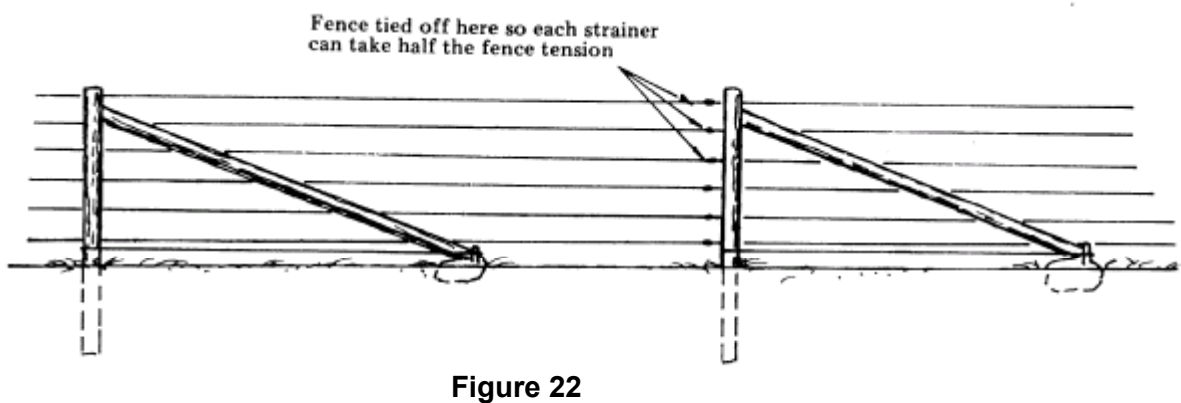
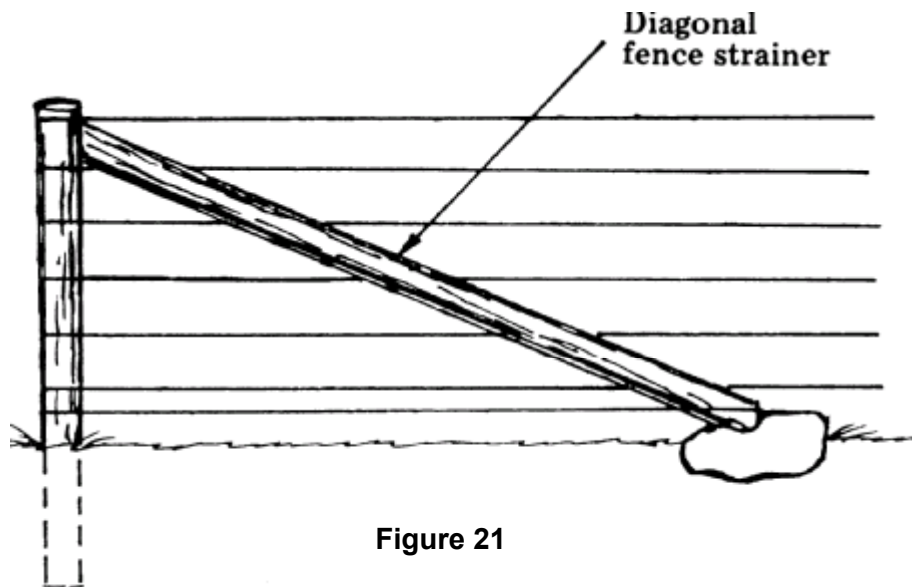
Figure 5a

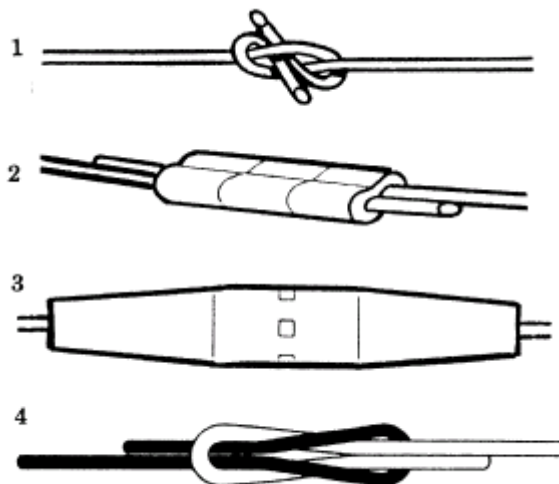
Figure 19



Parts of horizontal brace.

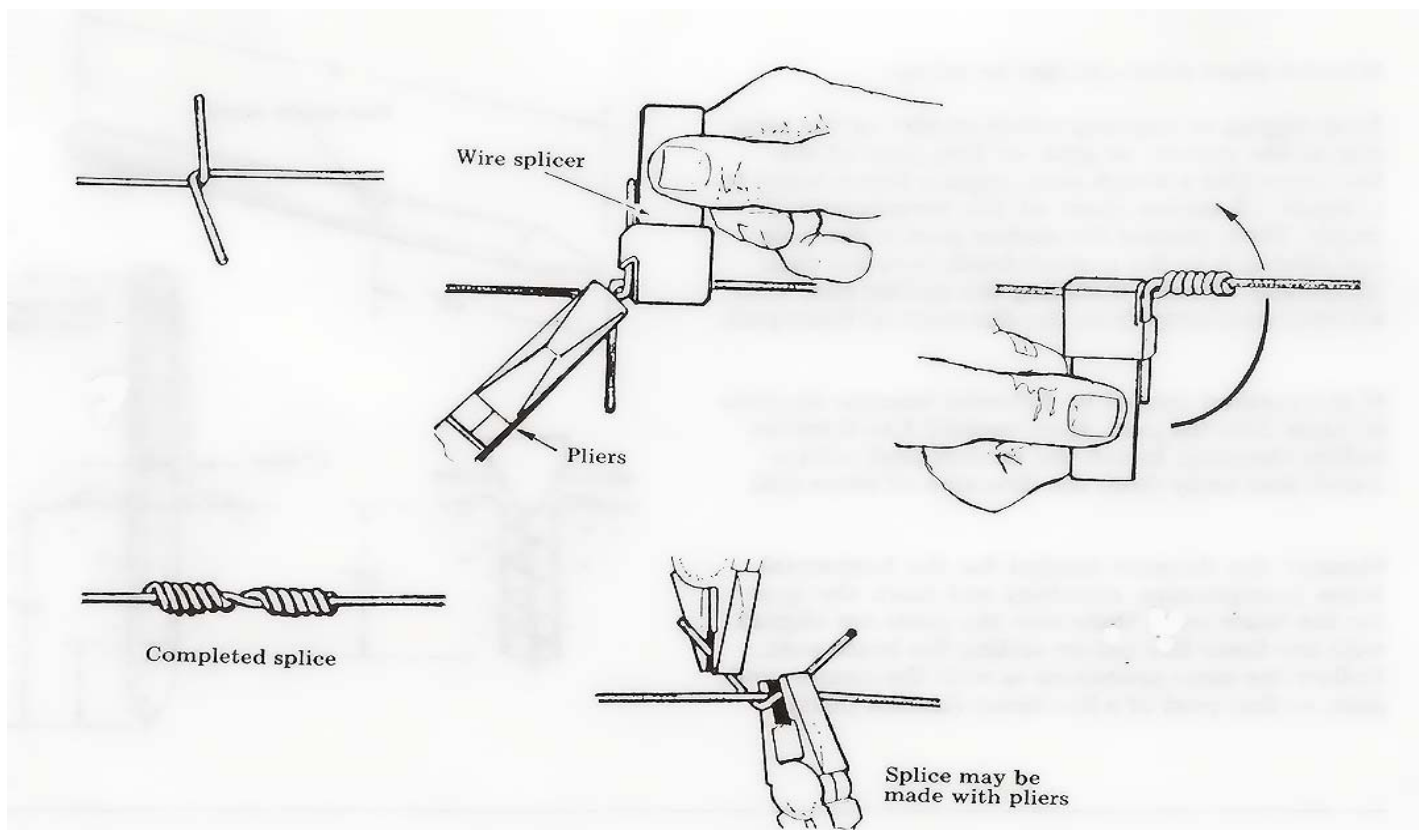
Figure 20



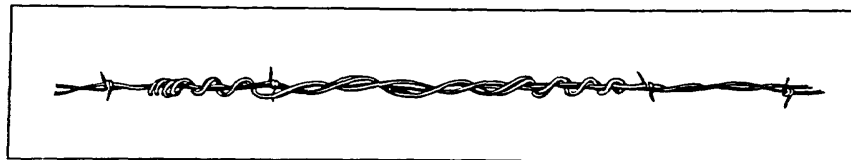
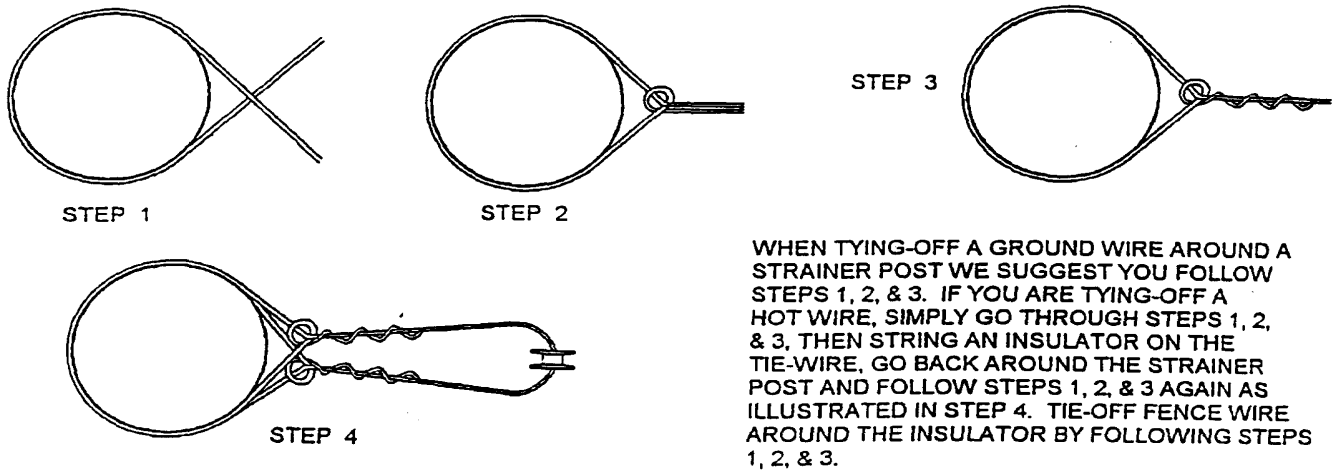


Four methods of splicing high tensile wires.

Figure 23A



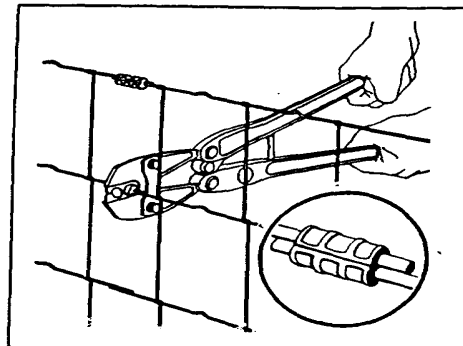
Tying the "Western Union" Splice.
Figure 23B



"Western Union" splice



SQUARE KNOT:
USED TO SPLICE WIRE TOGETHER



Compression sleeve for splicing wire.

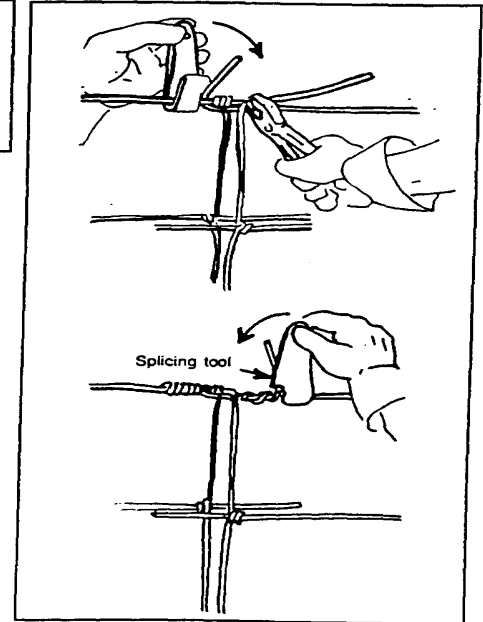
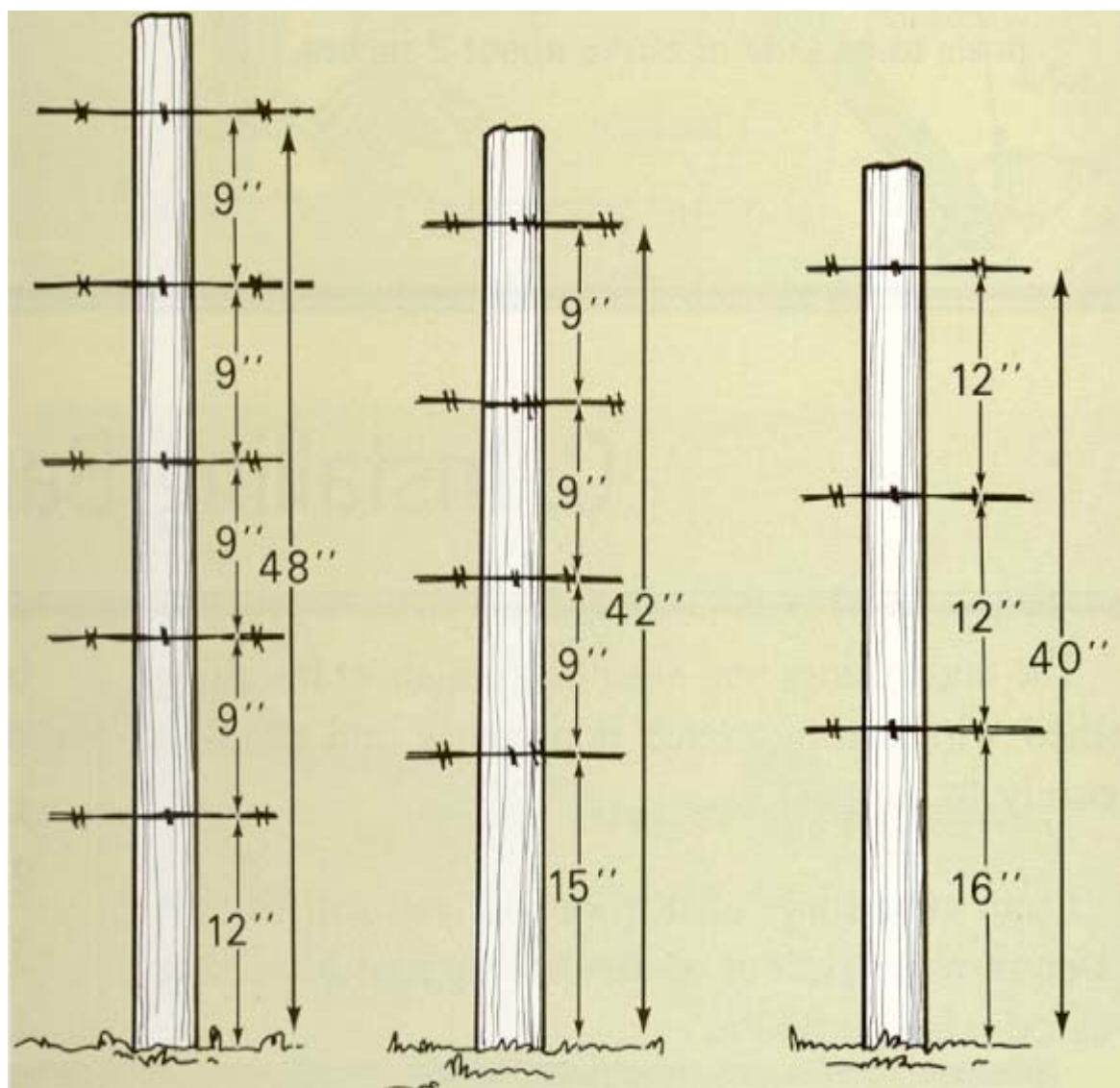


FIGURE 6.

KNOTS

Splicing Methods Figure 23C



5-Wire Spacing

4-Wire Spacing

3-Wire Spacing

Typical Barbed or Smooth Wire Spacings

Figure 24

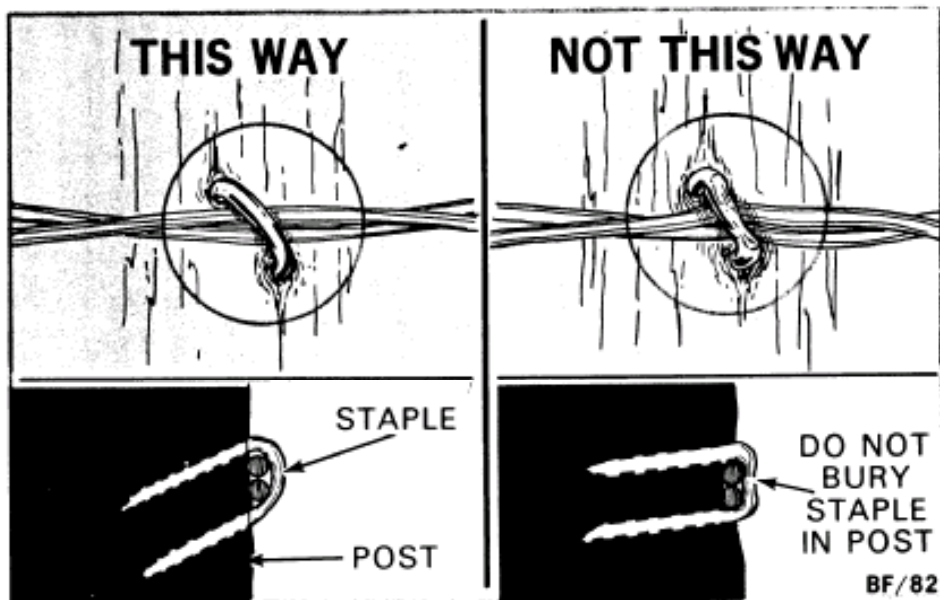
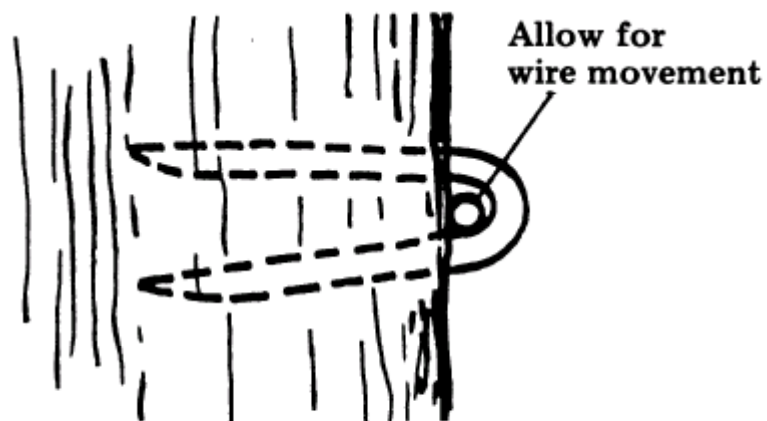


Figure 25



Staples should hold wire close to fence, but allow for expansion and movement of the wire.

Figure 26